

中国耳蕨属高山耳蕨组的分类学研究*

孔宪需 张丽兵

(中国科学院成都生物研究所 成都 610041)

STUDY ON THE FERN GENUS *POLYSTICHUM* ROTH SECT. *LASIOPOLYSTICHUM* DAIGOBO FROM CHINA

KUNG Hsian-Shiu ZHANG Li-Bing

(Chengdu Institute of Biology, the Chinese Academy of Sciences, Chengdu 610041)

Abstract The members of *Polystichum* Roth sect. *Lasiopolystichum* Daigobo are familiar ferns in the alpine area of W. China, N. India and the Himalayas. They are deciduous with thin, weak leaves; their persistent base of petioles forms a clumb hiding and protecting buds from the frost in winter. This may be an adaptation to severe alpine environments. As an endemic and natural group, the treatment of it by S. Daigobo(1972) as an independent section, *Polystichum* sect. *Lasiopolystichum* is reasonable. On the basis of examination of the specimens of mainland China, 30 species are recognized under this section although S. Daigobo(1972) established this section with only three species included. Based on the microscapes on the lower surface of pinnae, the section is divided into 2 series: Ser. Moupinensia and Ser. Sinensia. Moreover, three new species, two new varieties and a new combination are reported: *P. rufopaleaceum*, *P. saxicola*, *P. kangdingense*, *P. sinense* var. *lobatum*, *P. mollissimum* var. *laciniatum*, and *P. integrilobum*.

Key words *Polystichum* sect. *Lasiopolystichum*; Ser. Moupinensia; Ser. Sinensia; *P. rufopaleaceum*; *P. saxicola*; *P. kangdingense*; *P. sinense* var. *lobatum*; *P. mollissimum* var. *laciniatum*; *P. integrilobum*

摘要 高山耳蕨组的成员是中国西部、印度北部和喜马拉雅山区常见的蕨类。其成员为夏绿植物,叶片薄而柔弱。秋季叶片枯萎后叶柄基部宿存在地面形成一个丛堆以保护幼芽,这显然是对高山严峻环境的适应。作为高山地带特有类型,1972年日本蕨类学家 Sigeru Daigobo 将它们作为耳蕨属下的一个组——高山耳蕨组 Sect. *Lasiopolystichum* Daigobo,这是合理的。Daigobo 建立此组时只包含 3 个种,经过对中国大量标本及有关文献的研究,现知在中国约有 30 种应归入此组,其中有 3 新种:红鳞耳蕨 *P. rufopaleaceum*, 石生耳蕨 *P. saxicola*, 康定耳蕨 *P. kangdingense*; 2 新变种,裂叶耳蕨 *P. sinense* var. *lobatum*, 条裂耳蕨 *P. mollissimum* var. *laciniatum*; 1 新组合钝裂耳蕨 *P. integrilobum* (*Sorolepidium*)。据羽片背面的小鳞片类型可将高山耳蕨组划分为 2 个系:穆坪系 Ser. Moupinensia 和中华系 Ser. Sinensia。

关键词 耳蕨属; 高山耳蕨组; 穆坪系; 中华系; 红鳞耳蕨; 石生耳蕨; 康定耳蕨; 裂叶耳蕨; 条裂耳蕨; 钝裂耳蕨

高山耳蕨组 *Polystichum* sect. *Lasiopolystichum* 的成员是中国西部、印度北部、喜马拉雅山区亚高山及高山草甸、暗针叶林地带常见的蕨类植物。这群耳蕨为夏绿型,叶片较薄,秋季枯萎凋谢后,叶柄基部宿存在地面形成一个丛堆,根茎上部的芽保藏在其中,来年

* 国家自然科学基金和中国科学院成都地奥科学基金资助项目。

The project supported by NSFC and DASf.

1997-06-29 收稿,1997-12-18 收修改稿。

发出新叶。这显然是对高山严峻环境的适应。作为高山生境下的独特类型, 1972 年 Sigeru Daigobo 把它们在分类学上划归为耳蕨属 *Polystichum* 下的一个组, 这是合理的处理。对于本组的部分种类, 已有前文(Kung, 1989)作过研究, 除此之外, 同属本组的还有以中华耳蕨 *P. sinense* 为代表的另一蕨类类群。S. Daigobo 1972 年建立本组 Sect. *Lasiopolystichum* 时是以拉钦耳蕨 *P. lachenense* (Hook.) Bedd. 为模式的, 另外包含两个种, 即: 芒刺耳蕨 *P. prescottianum* (Wall.) Moore 和威尔逊耳蕨 *P. wilsoni* Christ (1911), 后者的有效学名应为中华耳蕨 *P. sinense* Christ (1905)。由于当时的研究材料仅限于日本、朝鲜、中国台湾等地, M. Tagawa 和 S. Daigobo 所建立和划分的耳蕨属若干组并未包括中国大陆的种类。经对中国大陆标本及文献的研究, 连同原先的 3 个种共约近 30 种应归入高山耳蕨组。这个组的现代分布中心应在中国西南、印度北部及喜马拉雅山区; 由此向东间断分布到台湾和日本的高山。高山耳蕨组按羽片背面的小鳞片类型可划分为两群, 一群以拉钦耳蕨和穆坪耳蕨为代表, 羽片背面具披针形小鳞片; 另一群以中华耳蕨和芒刺耳蕨为代表, 羽片背面具纤毛状的小鳞片。本文以此为基础在组下设立两个系, 以区分有关种类。早在七十年代初, 中国蕨类植物学家秦仁昌即曾有类似的设想, 虽然当时他对本属分组的意见与 M. Tagawa 和 S. Daigobo 等人的不尽相同, 但在高山耳蕨组下分系的观念却已具备。本文分系的方案即多少采纳了秦教授的意见。

本文涉及的部分种类, 特别是穆坪系 Ser. *Moupinensia* 的成员, 已有专文论述^①, 本文只列种名, 文献引证等从略。

高山耳蕨组 Sect. *Lasiopolystichum* Daigobo in Sci. Rep. Tokyo Kyoiku Daigaku B. 15(224): 70. 1972.

Sect. *Prescottianum* Khullar in S. S. Bir, Biol. Ind. Pterid. 149. 1986.

Sorolepidium auct non Tagawa (1940, p. p.): Fraser-Jenkins in Asp. Pl. Sci. 13: 256. 1991.

高山夏绿植物。秋季叶凋谢后叶柄基部宿存, 在根茎上部形成丛堆突出地面; 叶片一回羽状, 二回羽状分裂或少为二回羽状; 叶片草质或纸质, 背面多少有披针形或纤毛状小鳞片。囊群顶生子小脉, 多有盖。

约 30 种, 主要分布于中国西南、印度北部、喜马拉雅山区高山地带, 少数分布达中国台湾以及日本高山。

1. 穆坪系 新系

Ser. *Moupinensia* H. S. Kung et L. B. Zhang, ser. nov.

Typus nominis seriei: *Polystichum moupinense* (Franch.) Bedd.

Pinnæ subtus paleis anguste lanceolatis instructae.

羽片背面小鳞片为狭披针形。

1 拉钦耳蕨(植物研究) *Polystichum lachenense* (Hook.) Bedd.

2 杜氏耳蕨(植物研究) *Polystichum duthiei* (Hope) C. Chr.

3 拟穆坪耳蕨(植物研究) *Polystichum paramoupinense* Ching

① Kung H S (孔宪需), 1989. Studies on *Polystichum moupinense* (Franch.) Bedd. and its relatives. Bull Bot Res, 9 (3): 1~11, fig. 1~5

- 4 穆坪耳蕨(植物研究) *Polystichum moupinense* (Franch.) Bedd.
- 5 哈巴耳蕨(植物研究) *Polystichum habaense* Ching et H. S. Kung
- 6 栗鳞耳蕨(植物研究) *Polystichum castaneum* (Clarke) Nayar et Kaur
- 7 陕西耳蕨(秦岭植物志) *Polystichum shensiense* Christ
- 8 丽江耳蕨(植物研究) *Polystichum lichiangense* (Wright) Ching
- 9 钝裂耳蕨(云南大学学术论文集)

Polystichum integrilobum (Ching ex Y. T. Hsieh) W. M. Chu, comb. nov.

Sorolepidium integrilobum Ching ex Y. T. Hsieh in Bull. Bot. Res. 9(3):48, pl. 2. 1989.

Polystichum integrilobum Ching in W. M. Chu in Coll. Works Yunnan Univ. 1962 (1):67. 1962, nom. nud.

分布:中国西南(云南丽江)。

- 10 钝羽耳蕨(植物研究) *Polystichum obtusipinnum* Ching et H. S. Kung
- 11 怒江耳蕨(植物研究) *Polystichum salwinense* Ching et H. S. Kung
- 12 黛鳞耳蕨(新拟) 黑鳞耳蕨(植物研究) *Polystichum nigrum* Ching et H. S. Kung
- 13 乌柄耳蕨(植物研究) *Polystichum melanostipes* Ching et H. S. Kung
- 14 台中耳蕨(植物分类学报) *Polystichum taizhongense* H. S. Kung

II. 中华系 新系

Ser. *Sinensia* H. S. Kung et L. B. Zhang, ser. nov.

Typus nominis seriei: *Polystichum sinense* Christ

Pinnæ subtus paleis fibrosis, flavo-brunneis instructae.

羽片背面小鳞片为黄棕色纤毛状。

- 15 芒刺耳蕨(植物研究)

Polystichum prescottianum (Wall. ex Mett.) Moore, Ind. Fil. 101. 1858; Bedd. Ferns Brit. Ind. pl. 34. 1865 & Handb. Ferns Brit. Ind. 216, f. 105. 1883; Tagawa in Acta Phytotax. Geobot. 4:140. 1935; Mehra et Bir in Res. Bull. Punj. Univ. 15(1~2): 127. 1964; Hara, Fl. E. Himal. 1:480. 1966; Daigobo in Sci. Rep. Tokyo Kyoiku Daigaku B. 15(224):70. 1972(excl. syn.); Iwatsuki in Ohashi, Fl. E. Himal. 3:190. 1975; Daigobo in H. L. Li et al., Fl. Taiwan 1:396. 1975(excl. syn.); Dhur, Ferns N. W. Himal. 74. 1980; Khullar et Gupta in Nova Hedwigia 32:436, f. 57. 1980; Nakaike in Misc. Publ. Na. Sci. Mus. Tokyo 1982:144. 1982(excl. syn.); Ching et al. in C. Y. Wu, Fl. Xizang. 1:221, pl. 54:5~8. 1983; C. M. Kuo in Taiwaniana 30:32. 1985; H. S. Kung in Bull. Bot. Res. 9(3):11. 1989; Fraser-Jenking in Asp. pl. Sci. 13:258. 1991; J. C. Wang et W. C. Shieh in T. C. Huang, Fl. Taiwan 2nd ed. 1:347. 1994.

Aspidium prescottianum Wall. ex Mett. Farn. Pheg. Asp. 332. 1858; Hook. Sp. Fil. 4:22, t. 223. 1862; Baker in Hook. et Baker, Syn. Fil. 235. 1867.

Polystichum eriaceum Ching et S. K. Wu in C. Y. Wu, Fl. Xizang. 1:221, pl. 54: 1~4. 1983.

分布:印度北部,尼泊尔,不丹,中国(西藏、台湾)。

- 16 亚东耳蕨(西藏植物志)

Polystichum yatongense Ching et S. K. Wu in C. Y. Wu, Fl. Xizang. 1:220. 1983; H. S. Kung in Bull. Bot. Res. 9(3):11. 1989.

分布: 中国(西藏)。

17 拟栗鳞耳蕨(植物研究)

Polystichum pseudocastaneum Ching et S. K. Wu in C. Y. Wu, Fl. Xizang. 1:221. 1983; H. S. Kung in Bull. Bot. Res. 9(3):11. 1989.

P. brunneum Ching et S. K. Wu in C. Y. Wu, Fl. Xizang. 11:224, pl. 54:9~12. 1983.

分布: 中国西南(西藏南部)。

18 波密耳蕨(植物研究)

Polystichum bomiense Ching et S. K. Wu in C. Y. Wu, Fl. Xizang. 1:223, pl. 55: 1~3. 1983; H. S. Kung in Bull. Bot. Res. 9(3):12. 1989.

分布: 中国西南(西藏东部)。

19 西藏耳蕨(植物研究)

Polystichum tibeticum Ching in C. Y. Wu, Fl. Xizang. 1:219. 1983; H. S. Kung in Bull. Bot. Res. 9(3):12. 1989.

分布: 中国西南(西藏东南)。

20 昌都耳蕨(西藏植物志)

Polystichum qamdoense Ching et S. K. Wu in C. Y. Wu, Fl. Xizang. 1:227. 1983; H. S. Kung in Bull. Bot. Res. 9(3):9. 1989.

P. tumbazense Ching in C. Y. Wu, Fl. Xizang. 1:232. 1983.

P. qamdoense var. *elongatum* Ching et S. K. Wu in C. Y. Wu, Fl. Xizang. 1:228. 1983, p. p. (quoad specim. Qinghai-Xizang Exped. 12258, 12875).

分布: 中国西部(西藏东部, 云南西北, 川西部及北部, 甘肃)。

21 工布耳蕨(新拟) 工布高山耳蕨(西藏植物志)

Polystichum gongboense Ching et S. K. Wu in C. Y. Wu, Fl. Xizang. 1:228. 1983.

P. rarum Ching et S. K. Wu in C. Y. Wu, Fl. Xizang. 1:230, pl. 56:5~8. 1983.

Hubei(湖北): Shennongjia(神农架), G. X. Fu & Z. S. Zhang(傅国勋, 张志松) 1044. **Sichuan**(四川): Lixian(理县), X. Li(李馨) 74984, D. P. He(何获平) 46510; Shuajinsi(刷经寺), X. Li 78454; Barkam(马尔康), C. L. Wu(吴中伦) 32768, X. Li & J. X. Zhou(李馨, 周继西) 72667, 74447; Jinchuan(金川), Z. T. Guan(管中天) 2301; Luding(泸定), L. B. Zhang(张丽兵) 1123, 1158, K. Y. Lang *et al.*(郎楷永等) 774, K. C. Kuan & W. T. Wang(关克俭, 王文采) 675, W. P. Fang(方文培) 3565; Shimian(石棉), L. B. Zhang & X. S. Gou(张丽兵, 郭晓思) 2229, 2320; Kangding(康定), L. B. Zhang & X. S. Gou 2420; Jiulong(九龙), L. B. Zhang & X. S. Gou 2433, 2445; Qian-ning(乾宁), S. Jiang & C. L. Jing(姜恕, 金存礼) 2131, T. S. Ying(应俊生) 4516; Muli(木里); T. S. Ying 4389; Daocheng(稻城), Qinghai-Xizang. Exped. (青藏队) 5992; Derong(得荣), Qinghai-Xizang Exped. 3454; Xiangcheng(乡城), Qinghai-Xizang Exped. 4014, 4913; Mt. Ermei(峨眉山), H. S. Kung(孔宪需) 014. **Yunnan**(云南): Deqin(德钦), C. W. Wang(王启无) 69936, 69941, Qinghai-Xizang Exped. 2509, 2745. **Xizang**(Tibet)(西藏): Gongbo'gyamda(工布), Ludlow *et al.* 6876; Gonjo(贡觉), Veget. Exped. (植被组) 9555; Zayü(察隅), Qinghai-Xizang Exped. 73-318.

分布:中国西南(湖北,四川,云南,西藏)。

至今所知,工布耳蕨为中国西南特有;湖北,四川,云南为分布新记录。

22 薄叶耳蕨(新拟) 薄叶高山耳蕨(西藏植物志)

Polystichum bakerianum (Atkins.) Diels in Engl. u. Prantl, Nat. Pflanzfam. 1(4): 191. 1899; C. Chr. in Acta Hort. Gothob. 1:71. 1924; Christ in Bull. Acad. Geogr. Bot. Mans. 16:113. 1906; Iwatsuki in Ohashi, Fl. E. Himal. 3:190; Nakaike in Misc. Publ. Nat. Sci. Mus. Tokyo 1982:137. 1982; Ching *et al.* in C. Y. Wu, Fl. Xizang. 1: 228. 1983; Dixit, Census Ind. Pterid. 156. 1984; Iwatsuki in Ohba et Malla, Himal. pl. 1:297. 1988; Fraser-Jenkins in Asp. Pl. Sci. 13:259. 1991; S. K. Wu et X. Cheng in W. T. Wang, Vasc. Pl. Hengduan Mts. 1:143. 1933.

Aspidium prescottianum (Wall. ex Mett.) Moore var. *bakeriana* Atkins. mss. apud Clarke in Trans Linn. Soc. Sci. II Bot. 1:510, pl. 66. 1880.

Polystichum prescottianum (Wall. ex Mett.) Moore var. *bakerianum* (Clarke) Bedd. Handb. Ferns Brit. Ind. 210. 1883; Mehra et Bir in Res. Bull. Panjab. Univ. 15(1~2): 127. 1964.

Aspidium bakerianum Atkins. in Hook. Ic. Pl. pl. 1656. 1886; Hope in Journ. Bomb. Nat. Hist. Soc. 14:479. 1902.

Sichuan(四川): Shimian(石棉), L. B. Zhang(张丽兵)535, 537, 641, 2948; Luding(泸定), L. B. Zhang 912, 1067; Julong(九龙), T. S. Ying(应俊生)4092; Daocheng(稻城), Mt. Gongga(贡嘎岭), T. T. Yu(俞德俊)13114; Muli(木里), Qinghai-Xizang Exped. (青藏队)14189, 14729. **Yunnan**(云南): Degen(德钦), K. M. Feng(冯国楣)6217; Lijiang(丽江), K. M. Feng 8967; Dulongjiang(Kiukiang)(独龙江(俅江)), T. T. Yu 19819. **Xizang**(Tibet)(西藏), Cona(错那), Qinghai-Xizang Exped. 751890; Gyirong(吉隆), Qinghai-Xizang Exped. 6381; Cawalong(察瓦龙), C. Y. Wang(王启无)65834.

分布:印度北部,锡金,尼泊尔,中国西南(西藏南部,云南西北,四川西部)。

23 红鳞耳蕨 新种 图 1

Polystichum rufopaleaceum Ching (in sched.), sp. nov. TYPE: Yunnan(云南), Weixi(维西), Mt. Xuelong, alt. 3000~3200 m, 1940-06-17, K. M. Feng(冯国楣)4725 (type, PE). Fig. 1.

P. microchlamys auct non (Christ) Matsum.: S. K. Wu et X. Cheng in W. T. Wang, Vasc. Pl. Hengduan Mts. 1:139. 1993.

Species affinis *P. microchlamydi* (Christ) Matsum., sed pinnis inferioribus non abbreviatis, paleis rufo-brunneis, soriis exindusiatis differt.

Tota planta 40~70 cm. alta. Rhizoma erectum paleis lanceolatis, rufobrunneis obtectum. Frondes caespitosae; stipes 22~34 cm longus, basi 4~5 mm diametro, stramineus ventraliter canaliculatus, paleis lanceolatis et linearibus, inferne paleis ovatis majoribus intemixtis obtectus; lamina anguste ovata vel anguste elliptica, 32~60 cm longa, 18~26 cm lata; apice acuminata, basin versus leviter angustata, bipinnata; pinnae 20~25-jugae, fere patentibus, alternae, petiolis brevissimis, leviter incurvae, mediae 8~15 cm longae, 2~2.5 cm latae, apice longe acuminatae vel caudatae, basi oblique late cuneatae antice auriculatae, pinnatae; pinnulae 14~20-jugae, fere oppositae leviter ascendentes, oblique oblongae, 1~1.8 cm longae, 5~8 mm latae, apice acutae, basi oblique cuneatae et decurrentes antice au-

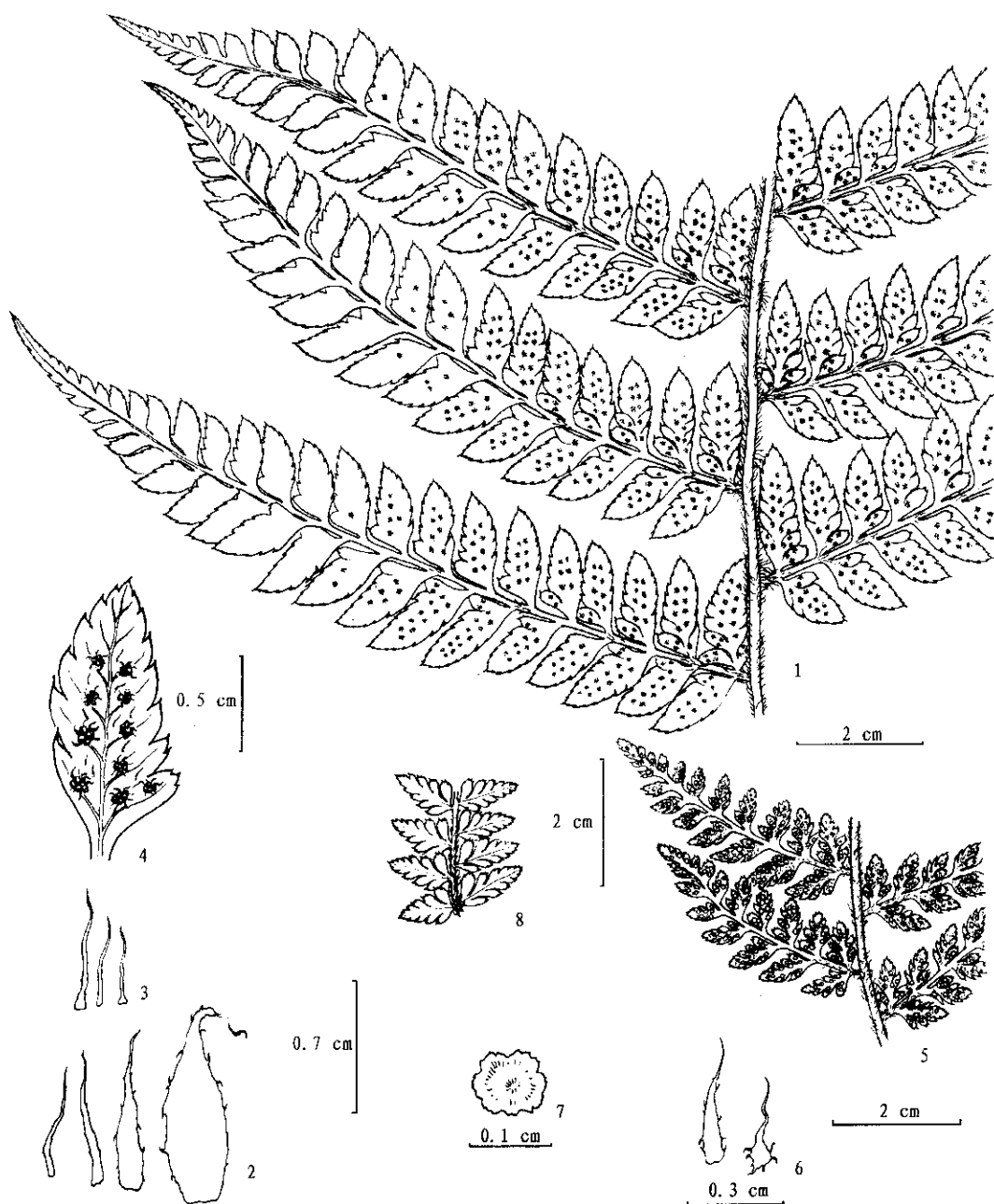


图1 1~4. 红鳞耳蕨 1. 羽片; 2. 叶柄鳞片; 3. 叶轴鳞片; 4. 小羽片, 示囊群。

5~7. 条裂耳蕨 5. 羽片; 6. 叶柄鳞片; 7. 囊群盖。8. 裂叶耳蕨: 羽片。(陈筠 绘)

Fig. 1 1~4. *Polystichum rufopaleaceum* 1. pinnae; 2. petiole scales; 3. rachis scales; 4. pinnula, showing sori.
5~7. *P. mollissimum* var. *laciniatum* 5. pinnae; 6. petiole scales; 7. indusium. 8. *P. sinense* var. *lobatum*: pinnulae.

riculatae, serratae, eae infimae antice maximae pinnatifidae; venae in pinnula pinnatae, subtus distinctae. Pagina frondis textura herbacea, supra paleis fibrosis sparsis subtus paleis fibrosis oblecta; rachides stramineae, ventraliter canaliculatae, paleis rufo-brunneis, laceolatis et linearibus. Sori rotundati in utroque latere costae positi, exindusiati.

本新种近似日本的小盖耳蕨 *P. microchlamys* (Christ) Matsum. 但下部羽片不缩短, 鳞片红棕色, 囊群无盖而不同。

Yunnan(云南): Weixi(维西), Mt. Xuelong, K. M. Feng(冯国楣)6481(PE); Gongshan(贡山), W. M. Chu *et al.*(朱维明等)20217. **Sichuan**(四川): Shimian(石棉), L. B. Zhang(张丽兵)424, 463, 553; Luding(泸定), K. Y. Lang *et al.*(郎楷永等)379.

24 中华耳蕨(秦岭植物志)

Polystichum sinense Christ in Bull. Soc. Bot. France 52. Mem. 1:30. 1905 et in Bull. Acad. Geogr. Bot. Mans 16; Fl. Tsinling. 2:158. t. 40, f. 1~2. 1974.

P. prescottianum (Wall. ex Mett.) Moore var. *sinense* Christ in Bull. Soc. Bot. Ital. 10:289. 1901; C. Chr. in Acta Hort. Gothob. 1:71. 1924.

P. wilsoni Christ in Bot. Gaz. 51:353. 1911; Daigobo in Sci. Rep. Tokyo Kyoiku Daigaku B. 15 (224):70. 1972 et in H. L. Li *et al.* Fl. Taiwan 1:399. 1975; C. M. Kuo in Taiwaniana 30:33. 1985; Fraser-Jenkins in Asp. Pl. Sci. 13:258. 1991; Nakaike et S. Malik, Crypt. Fl. Pakist. 1:287, f. 67. 1992; S. K. Wu et X. Cheng in W. T. Wang, Vasc. Pl. Hengduan Mts. 1:143. 1993; J. C. Wang et W. C. Shieh in T. C. Huang, Fl. Taiwan, 2nd ed. 1:350, photo 60. 1994.

P. prescottianum (Wall. ex Mett.) Moore var. *wilsoni* (Christ) C. Chr. in Acta Hort. Gothob. 1:71. 1924.

P. subsetiferum Ching, nom. seminud.; B. Z. Ding *et al.*, Fl. Henan. 1:92, fig. 110. 1981.

P. fukuyamae Tagawa in Acta Phytotax. Geobot. 6:159. 1937.

P. decorum Ching et S. K. Wu in C. Y. Wu, Fl. Xizang. 1:229, pl. 55:7~9. 1983.

P. lhasaense Ching in C. Y. Wu, Fl. Xizang. 1:230, pl. 55:4~6. 1983.

P. atuntzeense Ching, l. c. 231, pl. 56:1~4. 1983.

P. austro-tibeticum Ching et S. K. Wu, l. c. 233, pl. 56:9~12. 1983.

P. ellipticum Ching et S. K. Wu, l. c. 233. 1983.

P. parasinense C. Y. Yang, Fl. Xinjiang. 1:43, pl. 14:3~4. 1992.

24a 中华耳蕨 原变种

var. *sinense*

中华耳蕨是中国西部高山常见的夏绿蕨类,其体型大小差异很大,叶片也可由二回羽状分裂至二回羽状;与相近的种比较,其叶柄下部的较大鳞片为卵形,叶轴背面也有较宽的呈披针形的鳞片。*P. atuntzeense* 是其中较小的个体, *P. wilsoni*, *P. decorum* 则代表较大的个体,其叶片分裂较强成完全的二回羽状;但从大量标本来看,其间有若干过渡形态的个体难以区分。模式标本采自陕西秦岭北坡。

Shanxi(山西): Wuzhai(五寨), Yellow River Exped. (黄河队)1627. **Gansu**(甘肃): Minxian(岷县), T. P. Wang(王作宾)4609, 7654; Wenxian(文县), T. P. Wang 4648; Wushan(武山), Yellow River Exped. 4169; Xigu(西固), T. P. Wang 14412; Diebu(迭部), Y. P. Shu(徐养鹏)1196. **Qinghai**(青海): Yushu(玉树), s. coll. 00234. **Xinjiang**

(新疆): Changji(昌吉), C. Y. Yang(杨昌友)70.0016. **Sichuan** (四川): Mt. Emei(峨眉山), S. C. Cheng(郑学经)30125, Z. R. Hang(王中仁)C-74, K. S. Shing & K. Y. Lang(邢公侠, 郎楷永)029; Heishui(黑水), X. Li(李馨)73776; Shuajingsi(刷经寺), X. Li 74785; Lixian(理县), H. S. Kung(孔宪需)1757; Barkam(马尔康), C. L. Wu(吴中伦)32227, X. Li 71854, 72584; Baoxin(宝兴), K. L. Chu(曲桂龄)6365; Kangding(康定), K. C. Kuan & W. T. Wang(关克俭, 王文采)433, 675, 1401, H. S. Kung 6020, 6129, 6252, L. B. Zhang(张丽兵)158, 1659, 2214; Luding(泸定), L. B. Zhang 1044, 1160, 1323; Qianning(乾宁), S. Jiang & C. L. Jing(姜恕, 金存礼)2131; Jiulong(九龙), L. B. Zhang & X. S. Gou(张丽兵, 郭晓思)2455, 2502, 2513; Shimian(石棉), L. B. Zhang 563, 620; Yajiang(雅江), S. Jiang 5077, Z. T. Guan(管中天)43-0132; Muli(木里), J. S. Ying(应俊生)4389, 4516; Yanyuan(盐源), Qinghai-Xizang Exped. (青藏队)12387; Derong(得荣), Qinghai-Xizang Exped. 3454. **Yunnan** (云南): Degen(德钦), C. W. Wang(王启无)69811, 69859, 69946, Qinghai-Xizang Exped. 3634, W. M. Chu & J. J. He(朱维明, 和积监等)20780, K. M. Feng(冯国楣)6566; Weisi(维西), W. M. Chu 11694; Zhongdian(中甸), Jingshajang Exped. (金沙江队)4412; Mekong-Yangtze divid. (澜沧-扬子分水岭), Forrest 20209; Lijiang(丽江), K. M. Feng 9184; Lankong-Hokin(洱源-鹤庆), Delavay 1723(K), 2173(K). **Xizang** (Tibet)(西藏): Nyingchi(林芝), Z. C. Ni *et al.* (倪志诚等)0051, T. P. Yi(易同培)79050, Xizang Medic. Pl. Exped. (西藏中草药队)3665; Miling(米林), Qinghai-Xizang Exped. 3728; Zayü(察隅), Qinghai-Xizang Exped. 73-369; Medog(墨脱), Inst. Bot. Ecolog. Exped. (植物所生态组)14762; Yadong(亚东), G. C. Xia & K. T. Mi(夏光成, 米康泰)219; Nyalam(聂拉木), K. Y. Lang & Y. T. Zhang(郎楷永, 张永田)395, 3025, 4602, S. Jiang & D. Zheng(姜恕, 郑度)168, Qinghai-Xizang Exped. 5824; Bomi(波密), Qinghai-Xizang Exped. 73-1350; Lahasa(拉萨), Y. T. Zhang & K. Y. Lang 1753, 2010, 2619; Cona(错那), Qinghai-Xizang Exped. 1769, 1769, 1949; Gongbo'gyamda(工布), Qinghai-Xizang Exped. 7624, 7838; Leiwuqi(类乌齐), Xizang Exped. (西藏队)12953; Namling(南木林), Xizang Medic. Pl. Exped. (西藏中草药队)865; Garitog(岗拖), Qinghai-Xizang Exped. 74-3540; Qamdo(昌都), P. C. Tsoong(钟补求)5233.

N. W. Himalaya: Fraser-Jenkins s. n. (PE)

分布: 巴基斯坦, 印度北部, 尼泊尔, 不丹, 中国(西南, 西部至北部, 台湾)。

24b 裂叶耳蕨 新变种

var. **lobatum** H. S. Kung, var. nov. TYPE: Sichuan(四川), Lixian(理县), Shanjiao-ba(山脚坝), on slope, alt. 3300 m, 1957-06-28, Z. Y. Zhang & H. F. Zhou(张泽荣, 周洪富)2245(type, SZ).

A var. *sinensi* pinnulis lobatis recedit.

25 毛叶耳蕨(新拟) 毛叶高山耳蕨(西藏植物志)

Polystichum mollissimum Ching in C. Y. Wu, Fl. Xizang. 1:232, pl. 57:5~8. 1983.
P. mediocre Ching in C. Y. Wu, Fl. Xizang. 1:235, pl. 57:1~4. 1983.

25a 毛叶耳蕨 原变种var. **mollissimum**

Nei Monggol(内蒙古): Mt. Daqin(大青山), H. G. Zhang *et al.* (张惠光等)6261. **Hebei**(河北): Mt. Xiaowutai(小五台山), J. T. Li(李继同)2398. **Shanxi**(山西): Ningwu(宁武), T. Tang(唐进)1426; Huoxian(霍县), T. P. Wang(王作宾)995. **Shaanxi**(陕西): Mt. Taibai(太白山), T. N. Liou & P. C. Tsoong(刘慎谔, 钟补求)2264. **Gansu**(甘肃): Zhangxian(漳县), Yellow River Exped. (黄河队)4769; Yazhong(榆中), Yellow River Exped. 3403; Mt. Xinlong(兴隆山), s. coll. (采集人不明)64-075, Yellow River exped. 3410; Western part(西部地点不明), P. Licent 4130. **Qinghai**(青海): Eastern part(东部地点不明), Qinghai-Gansu Exped. (青甘队)1445. **Sichuan**(四川): Dajing(大金), Forrest Exped. 8th Team(森勘八队)5219; Daocheng(稻城), Qinghai-Xizang Exped. (青藏队)4364; Kangding(康定), H. S. Kung *et al.* (孔宪需等)6903. **Xizang(Tibet)**(西藏): Bianba(边坝), Qinghai-Xizang Exped. 11215; Bomi(波密), T. S. Ying, s. n. (应俊生, 无号); Qamdo(昌都); Qinghai-Xizang Veget. Exped. (青藏队植被组)10044.

分布: 中国华北, 西部西南。内蒙古, 河北, 甘肃, 青海, 四川, 为新分布记录。

25b 条裂耳蕨 新变种

var. **laciniatum** H. S. Kung *et* L. B. Zhang, var. nov. TYPE: Sichuan(四川), Barkam(马尔康), Dongba, alt. 3000 m, 1957-09-16, X. Li(李馨)71584A(type, PE).

P. laciniatum Ching in sched.

A var. *mollissimo* planta magnitudine majore, pinnulis pinnatifidis recedit.

Sichuan(四川): Barkam(马尔康), Dongba, alt. 3000 m, 1957-09-16, X. Li(李馨)71098, 71850; Kangding(康定), L. B. Zhang & X. S. Guo(张丽兵, 郭晓思)2156, 2162, 2163, 2169, 2172, 2200, 2219, 2237, H. S. Kung(孔宪需)6085; Jiulong(九龙), L. B. Zhang & X. S. Guo 2583.

26 杉本耳蕨(新拟) 小耳蕨(台湾植物志)

Polystichum inaense (Tagawa) Tagawa in Journ. Jap. Bot. 14:709. 1983; Ohwi, Fl. Jap. Pterid. 63. 1957; Tagawa, Col. Ill. Jap. Pterid. 80, pl. 25, f. 149. 1959; Devol *et* C. M. Kuo in Taiwania 24:111. 1979; Nakaike, N. Fl. Jap. Pterid. 513. 1982; J. C. Wang *et* W. C. Shieh in T. C. Huang, Fl. Taiwan, 2nd ed. 1:342. 1994.

Dryopteris inaensis Tagawa in Acta Phytotax. Geobot. 3:90. 1934.

分布: 中国东部(台湾), 日本。

27 石生耳蕨 新种 图 2

Polystichum saxicola Ching (in sched.), sp. nov. TYPE: Sichuan(四川), Mt. Emei(峨眉山), at the top of mountain, alt. 3140 m, 1963-08-09, K. H. Shing & K. Y. Lang(邢公侠, 郎楷永)027(type, PE). Fig. 2

Species affinis *P. frigidicolae* H. S. Kung *et* L. B. Zhang. sed petiolis inferne flavobrunneis, pinnis paucioribus, apice obtusis vel acutis nec acuminatis, segmentis, oblique oblongis differt.

Tota planta c. 35 cm alta. Rhizoma ignotum. Stipes c. 18 cm longus, basi 2 mm di-

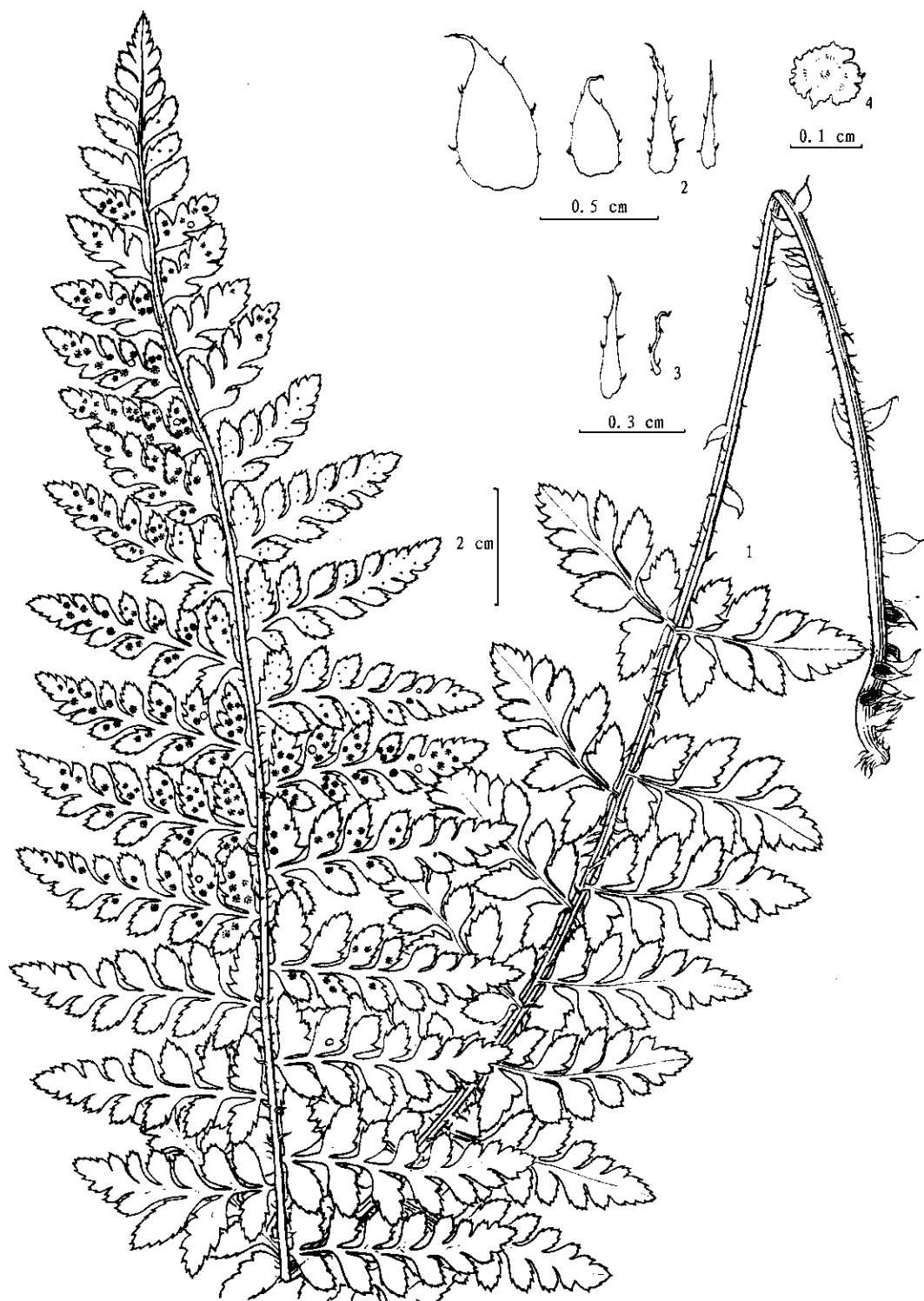


图2 石生耳蕨 1.叶; 2.叶柄鳞片; 3.叶轴鳞片; 4.囊群盖。(陈宽 绘)

Fig. 2 *Polystichum saxicola* 1. frond; 2. petiole scales; 3. rachis scales; 4. indusium.

amtro, inferne flavo-brunneus, ventraliter canaliculatus, paleis ovatis et linearibus ad basim paleis atro-brunneis flavo-marginatis obtectus; lamina oblanceolata, c. 34 cm longa, 8 cm lata, apice acuminata, basin versus leviter angustata, bipinnatifida; pinnae 24-jugae, alternae patentes, brevissime petiolulatae, oblongo-lanceolatae, mediae 3. 5~4 cm longae, c. 2 cm latae, apice obtusae vel acutae, basi inaequaliter sub-truncatae, antice auriculatae, pinnatifidae; segmenta 6~7-juga, alterna, ascendencia, oblique oblonga, 0.8~1 cm longa, 4~5 mm lata, apice rotundata, basi oblique cuneata, adrhachim pinnarum anguste decurrentia, antice ex auriculata, margine serrulata; venae in segmentis pinnatae, utrinque obscurae. Pagina frondis textura herbacea, supra glabrescens, subtus paleis obtecta; rhachides stramineae, ventraliter canaliculatae, utrinque paleis sparsis linearibus, subtus eis lanceolatis intermixtis obtecta. Sori in utroque latere costae segmenti positi; indusia rotunda, peltata, margine irregulariter serrata.

本种近寒生耳蕨 *P. frigidicola* H. S. Kung et L. B. Zhang, 但叶柄下部黄棕色; 羽片较少, 先端钝或急尖不为渐尖, 裂片斜矩圆形而不同。

28 寒生耳蕨(云南植物研究)

Polystichum frigidicola H. S. Kung et L. B. Zhang in Acta Bot. Yunnan. 17(1): 28, f. 2: 1~2. 1995.

Sichuan(四川): Mt. Emei(峨眉山), K. S. Shing & K. Y. Lang(邢公侠, 郎楷永) 002, 030; Ebian(峨边), S. L. Sun(孙祥麟) 1046; Daxiangling(大相岭), H. S. Kung(孔宪需) 3835; Luding(泸定), L. B. Zhang(张丽兵) 1154, 1155, 1156; Shimian(石棉), L. B. Zhang 612, 629, 639, 643; Kangding(康定), Z. S. Liu(刘振书) 882, Z. P. Huang(黄治平) 1932, J. S. Li(李金生) 023, L. B. Zhang & X. S. Gou(张丽兵, 郭晓思) 2326 2336; Muli(木里), Qinghai-Xizang Exped. (青藏队) 10372, 14427; Yanyuan(盐源), Qinghai-Xizang Exped. 12706, 12740; Leibo(雷波), Z. T. Guan(管中天) 8677, H. S. Kung 5476, 5489. **Yunnan**(云南): Qiaojia(巧家), W. M. Chu(朱维明) 5430; Lijiang(丽江), Mts. Hengduan Exped. (横断山队) 0202; Zhongdian(中甸), W. M. Chu & Z. D. Fang(朱维明, 方震东) 23547.

分布: 中国西南(四川西南, 云南西北)。

29 秦岭耳蕨(秦岭植物志)

Polystichum submite (Christ) Diels in Bot. Jahrb. 29: 192. 1900; Fl. Tsinling. 2: 160. 1974.

Aspidium submite Christ in Nuov. Giorn. Bot. Ital. n. ser. 4: 93. 1897.

Polystichum paradoxum Ching et Hsu in Fl. Tsinling. 2: 161. 224. 1974.

P. prescottianum (Wall. ex Mett.) Moore var. *sinense* auct non Christ (1901, p. p.); C. Chr. in Acta Hort. Gothob. 1: 71. 1924 (quod. spec. Wilson 2617).

Shaanxi(陕西): Xuxian(郃县), Girald s. n. 1892(K), Girald s. n. 1896(K); Mt. Zhongnan(终南山), F. T. Wang & K. T. Fu(汪发纘, 傅坤俊) 275; Mt. Hua(华山), W. Y. Hsia(夏纬英) 4324, 4438, 4441, K. S. Hao(郝景盛) 4221; Mt. Taibai(太白山), Y. P. Hsu(徐养鹏) 608; Mt. Nanwutai(南五台山), Y. T. Shieh(谢寅堂) 2035; Zhouzhi(周至), Y. P. Hsu 644; Ningshan(宁陕), Y. P. Hsu 811, 834. **Gansu**(甘肃): Kangxi-an(康县), Y. P. Hsu 987, 1152; Southern part(南部), W. Y. Hsia 6761; **Henan**(河

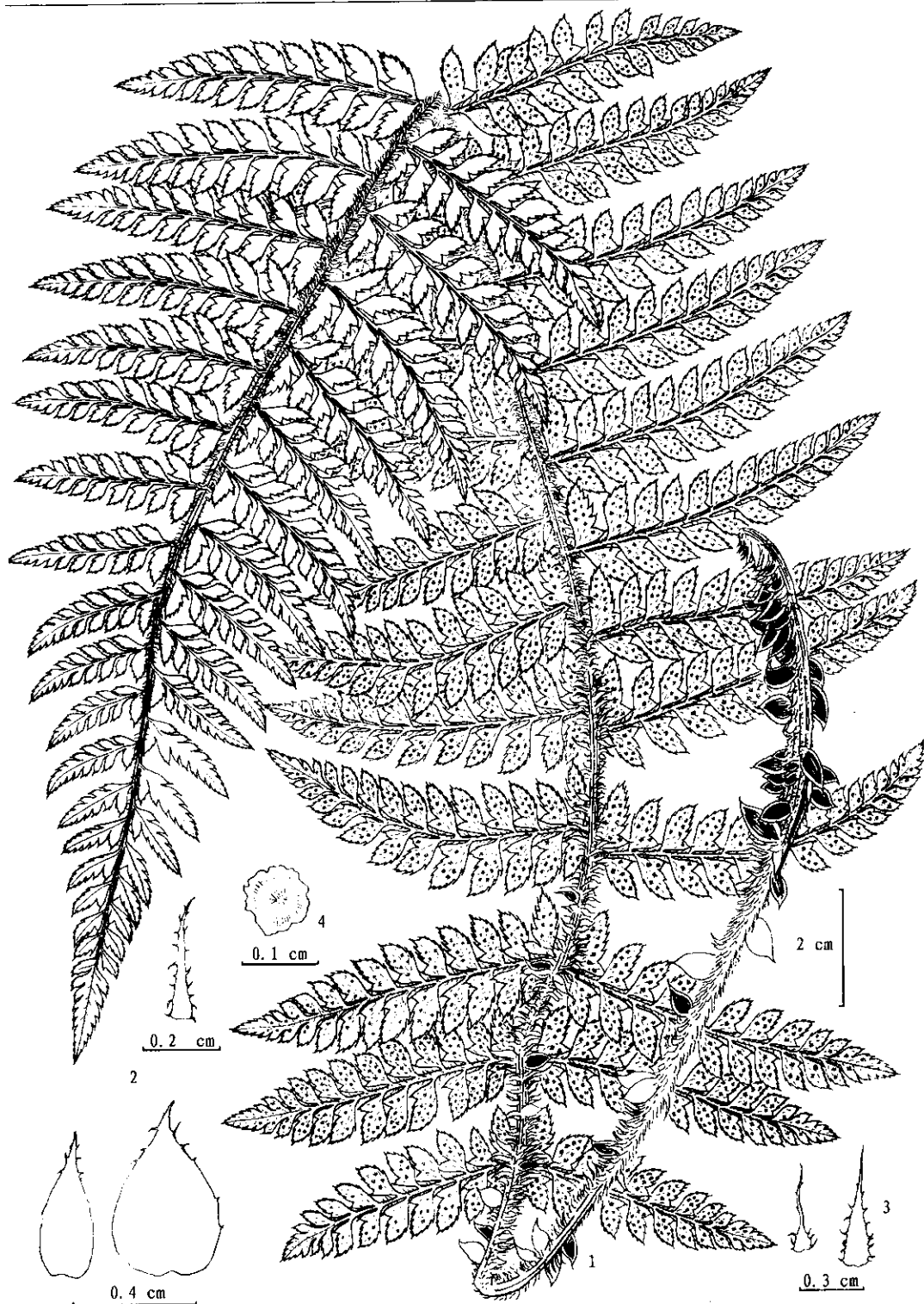


图3 康定耳蕨 1.叶；2.叶柄鳞片；3.叶轴鳞片；4.囊群盖。(陈笺 绘)

Fig. 3 *Polystichum kangdingense* 1. frond; 2. petiole scales; 3. rachis scales; 4. indusium.

南): Songxian(嵩县), Henan Inst. Forest(河南林科所)1079. **Shanxi**(山西): Yuanqu(垣曲), S. Y. Bao & S. J. Yan(包士英, 严生俊)2288, 2297. **Sichuan**(四川): Lixian(理县), H. S. Kang(孔宪需)1843, 1981; Pingwu(平武), Y. G. Liao *et al.*(廖荣贵等)392; Baoxing(宝兴), K. L. Chu(曲桂龄)6304; Xiaojin(小金), S. S. Chang & Y. X. Ren(张秀实, 任有铤)6657, 6823; Dajing(大金), S. Jiang(姜恕)8860; Kangding(康定), H. S. Kung 6124; Jiulong(九龙), L. B. Zhang(张丽兵)2771, 2849; Western part(西部地点不详), Wilson 2617(K).

分布: 中国西部(山西, 河南, 陕西, 甘肃, 四川)。

30 康定耳蕨 新种 图 3

Polystichum kangdingense H. S. Kung et L. B. Zhang, sp. nov. TYPE: Sichuan(四川), Kangding(康定), alt. 2400 m, in valley, 1981-08-28, H. S. Kung(孔宪需)6189 (type, CDBI, PE). Fig. 3

species affinis *P. submitti* Christ, sed laminis majoribus, bipinnatis, paleis stipitum magis latoribus, ovatis differt.

Tota planta 35~60 cm alta. Rhizoma erectum, paleis lanceolatis obtectum. Frondes caepitosae, stipes 14~28 cm longus, basi 3~4 mm diametro, stramineus, ventraliter canaliculatus, paleis brunneis lanceolatis et linearibus densis necnon paleis ovatis majoribus atro-brunneis, flavo-marginatis intermixtis obtectus; lamina late lanceolata, 35~54 cm longa, 8~14 cm lata, apice acuminata, basin versus leviter vel non angustata, bipinnata; pinnae 22~30-jugae, alternae, fere patentes, brevissime petiolulatae, lanceolatae vel lineari-lanceolatae, mediae 4~7 cm longae, 1. 2~2. 5 cm latae, apice acuminatae, basi oblique late cuneatae antice auriculatae, pinnatae; pinnulae 8~12-jugae, ascendentes, oblique ovatae, 6~14 mm longae, 4~8 mm latae, apice acutae, basi oblique cuneatae et decurrentes, antice triangulate auriculatae, margine serrulatae; venae in pinnula pinnatae, supra prominulae, subtus obscurae. Pagina frondis chartacea, supra paleis fibrosis sparsis, subtus eis confertioribus obtecta; rhachides stramineae, ventraliter canaliculatae, utrinque paleis lanceolatis et linearibus densis necnon dorso eis ovatis intermixtis obtectae. Sori in utroque latere costulae positi; indusia rotunda, peltata, margine repanda.

本种近秦岭耳蕨 *P. submitti* Christ, 但叶片较大呈二回羽状, 叶柄大鳞片较宽呈卵形而不同。

Sichuan(四川): Kangding(康定), alt. 2400 m, in valley, 1981-08-28, H. S. Kung(孔宪需)6122, 6124, 6166, 6167(CDBI, PE); Lixian(理县), D. P. He(何获平)44839; Xiaojin(小金), S. S. Chang & Y. X. Ren(张秀实, 任有铤)6823; Jinchuan(金川), X. Li(李馨)76937, 78209; Jiulong(九龙), L. B. Zhang(张丽兵)2092; Muli(木里), Y. B. Yang & G. Yao(杨亚滨, 姚淦)468.

致谢: 本工作中除使用本所标本馆标本(CDBI)外, 还承中国科学院植物研究所标本馆(PE), 中国科学院昆明植物研究所标本馆(KUN), 云南大学生态地植物所蕨类植物标本馆(PYU), 四川大学植物标本馆(SZ), 西北植物研究所植物标本馆(WUG)提供植物标本; 英国皇家植物园标本馆(K)提供部分模式植物标本或照片; 邢公侠(北京), 武素功、朱维明(昆明)等先生提供有关文献资料; 陈笈先生绘图, 作者在此一并致谢。